

Remarks

The Office Action mailed on October 3, 2003 has been carefully reviewed along with the references cited therein. In the subject Office Action, the Examiner rejected claims 1-4 and 9-12 under §103(a) as being unpatentable over Oshio et al. (U.S. Patent No. 6,274,890 B1) in view of Arndt (U.S. Patent No. 6,376,902 B1). Further in view of Yeager et al. (U.S. Patent No. 6,507,049 B1), the Examiner also rejected claims 6-8 under §103(a).

In this response Applicants present various amendments and clarifying remarks believed to remedy the Examiner's rejections and place the claims in condition for allowance.

For a claim to be obvious, the prior art must 1) suggest to a person of ordinary skill in the art that they should make the claimed composition or carry out the claimed process, and 2) reveal to a person of ordinary skill in the art a reasonable expectation of success in making the composition or carrying out the process. *In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991). Further, to establish *prima facie* obviousness of a claim, all the claim limitations must be taught or suggested by the prior art. M.P.E.P. §2143.03 (8th ed.). For the following reasons Applicants submit that the references cited by the Examiner do not teach or suggest all the limitations of the amended claims and therefore render pending claims 1-4 and 6-13 non-obvious.

In an effort to advance the prosecution of this application, Applicants also additionally take into consideration the references cited by the Examiner in his Office Action mailed April 9, 2003, i.e. U.S. Patents 4,316,208; 5,998,810; and 5,298,768.

Re: Claim 1

U.S. Patent 6,274,890 does not disclose using the "solder bridges" of Claim 1 to connect the semiconductor die and lead frame, neither does the patent teach "a metal lead frame having mass sufficient to provide low thermal resistance". The patent does not provide any motivation in its specification to incorporate the aforementioned 2 elements and make the specific semiconductor device of Claim 1.

U.S. Patent 6,376,902 does not disclose using the “at least two solder bridges” of Claim 1 to connect the semiconductor die and lead frame, neither does the patent specifically teach “a metal lead frame having mass sufficient to provide low thermal resistance”. The patent does not provide any motivation in its specification to incorporate the aforementioned 2 elements and make the specific semiconductor device of Claim 1.

Both U.S. Patents 5,298,768 and 6,507,049 fail to disclose the “solder bridges” and “a metal lead frame having mass sufficient to provide low thermal resistance” of Claim 1. U.S. Patent 4,316,208 does not teach the limitation of “a metal lead frame having mass sufficient to provide low thermal resistance”. U.S. Patent 5,998,810 teaches nothing about “solder bridges”, “a metal lead frame having mass sufficient to provide low thermal resistance”, or “a reflector positioned within the package”. No motivation or suggestion has been discovered in the disclosures of these patents in making something like the specific semiconductor device of Claim 1.

Re: Claim 2

As a dependent claim from Claim 1, Claim 2 is at least equally patentable as Claim 1. Furthermore, Applicant submits that Claim 2 is more patentable based on that U.S. Patents 6,376,902; 5,298,768; and 5,998,810 are totally silent on “refractor” or “focusing dome”, and on that U.S. Patents 6,274,890; 4,316,208; and 6,507,049 fail to teach a “focusing dome operative to refract light ... to create a predetermined radiation pattern.” No motivation provided in these patents either to make the specific semiconductor device of Claim 2.

Re: Claim 3

As a dependent claim from Claim 2, Claim 3 is at least equally patentable as Claim 2. Furthermore, Applicant submits that Claim 3 is more patentable based on that none of the U.S. Patents 6,274,890; 6,376,902; 5,298,768; 4,316,208; 5,998,810; and 6,507,049 has specifically taught to produce the “120 degree illumination pattern” of Claim 3. Applicant has discovered no motivation either in these patents to make the specific semiconductor device of Claim 3.

Re: Claim 6

As a dependent claim from Claim 1, Claim 6 is at least equally patentable as Claim 1. Furthermore, Applicant submits that Claim 6 is more patentable based on that none of the U.S. Patents 6,274,890; 6,376,902; 5,298,768; 4,316,208; 5,998,810; and 6,507,049 has specifically disclosed the “lead frame having a thermal resistance less than 300 K°/W” of Claim 6. Applicant has not discovered any motivation in these patents to make the specific semiconductor device of Claim 6.

Re: Claims 4, 7, 8, 9, 10, and 12

As dependent claims from Claim 1, Claims 4, 7, 8, 9, 10, and 12 are at least equally patentable as Claim 1.

Re: Claim 11

As a dependent claim from Claim 1, Claim 11 is at least equally patentable as Claim 1. Furthermore, Applicant submits that Claim 11 is more patentable based on that none of the U.S. Patents 6,274,890; 6,376,902; 5,298,768; 4,316,208; 5,998,810; and 6,507,049 has specifically disclosed that “the light emitting component and the substrate are arranged side-by-side over the reflector” as illustrated in Claim 11. Applicant has not discovered any motivation in these patents to make the specific semiconductor device of Claim 11.

Re: New Claim 13

First of all, Applicant respectfully contend that U.S. 6,376,902 (Arndt) does not disclose a lead frame having three anode contact pads and one cathode pad, instead, the inventor discloses a lead frame having one anode contact pad and three cathode pads. Please see lines 57-58, Column 4. As such, none of the U.S. Patents 6,274,890; 6,376,902; 5,298,768; 4,316,208; 5,998,810; and 6,507,049 has specifically disclosed the “metal lead frame comprises three anode contact pads and one cathode contact pad” as depicted in Claim 13. Applicant has not discovered any motivation in these patents to make the specific semiconductor device of Claim 13. Claim 13 is therefore more patentable than Claim 1 from which it depends.

Re: New Claim 14

Each of Oshio and Arndt clearly show wire bonding to a top side contact.

In view of the above, it is submitted that claims 1-4 and 6-13 patentably distinguish over the prior art. Applicant respectfully requests an early indication of allowance of the application.

Respectfully submitted,

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